

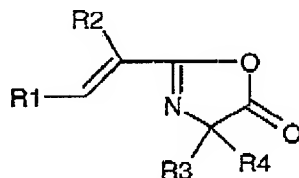
In the Claims:

26. (currently amended) A copolymer comprising:

1 to 99 mole percent of a dimethylacrylamide macromer,

1 to 99 mole percent of a monomeric unit derived from monomers selected from the group consisting of acrylamides, vinyl substituted lactams, and poly(alkylene oxides), and hydroxyalkyl methacrylates, wherein the alkylene or alkyl groups have 1 to 6 carbon atoms, and

1 to 99 mole percent of a monomer selected from the group consisting of the formula:



where R¹ and R² independently denote a hydrogen atom or a lower alkyl radical with one to six carbon atoms, and R³ and R⁴ independently denote alkyl radicals with one to six carbon atoms or a cycloalkyl radicals with 5 or 6 carbon atoms.

29. (new) The copolymer of claim 26 wherein the dimethylacrylamide macromer is derived from the reaction of isocyanatoethylmethacrylate with the reaction product obtained by reacting dimethylacrylamide with mercaptoethanol

30. (new) A coating copolymer comprising:

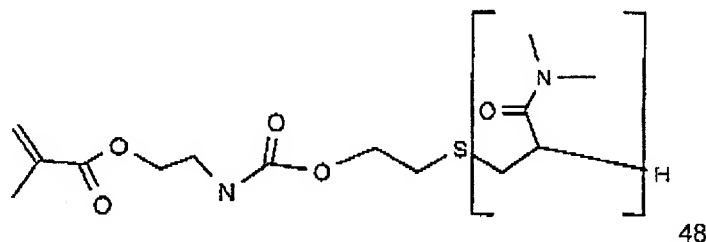
a dimethylacrylamide macromer;

at least one monomeric unit derived from hydrophilic monomers; and

at least one monomeric unit derived from functionally reactive monomers selected from the group consisting of epoxy-functional monomers, azlactone-functional monomers, isocyanate-functional monomers and acid-anhydride-functional monomers.

31. (new) The coating copolymer of claim 30 wherein the dimethylacrylamide macromer is derived from the reaction of isocyanatoethylmethacrylate with the reaction product obtained by reacting dimethylacrylamide with mercaptoethanol

32. (new) The coating copolymer of claim 30 wherein the dimethylacrylamide macromer has the following structural formula:

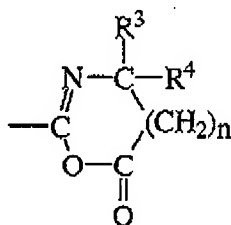


33. (new) The coating copolymer of claim 30 wherein the functionally reactive monomers are selected from the group consisting of glycidyl methacrylate, allyl glycidyl methacrylate, allyl glycidyl ether, 4-vinyl-1-cyclohexene-1,2-epoxide, 2-alkenyl azlactone, isocyanomethacrylate, maleic anhydride and itaconic anhydride.

34. (new) The coating copolymer of claim 30 wherein the hydrophilic monomers are selected from the group consisting of 2-hydroxyethyl-acrylate, 2-hydroxypropyl-acrylate, 3-hydroxypropyl-acrylate, 2,3-dihydroxypropyl-acrylate, polyethoxyethyl-acrylate, polyethoxypropyl-acrylate, 2-hydroxyethyl-methacrylate, 2-hydroxypropyl-methacrylate, 3-hydroxypropyl-methacrylate, 2,3-dihydroxypropyl-methacrylate, polyethoxyethyl-methacrylate, polyethoxypropyl-methacrylate, 2-hydroxyethyl-acrylamide, 2-hydroxypropyl-acrylamide, 3-hydroxypropyl-acrylamide, 2,3-dihydroxypropyl-acrylamide, polyethoxyethyl-acrylamide, polyethoxypropyl-acrylamide, 2-hydroxyethyl-methacrylamide, 2-hydroxypropyl-methacrylamide, 3-hydroxypropyl-methacrylamide, 2,3-dihydroxypropyl-methacrylamide, polyethoxyethyl-methacrylamide, polyethoxypropyl-methacrylamide, acrylamide, methacrylamide, N-methylacrylamide, N-methylmethacrylamide, N,N-dimethylacrylamide, N,N-dimethylmethacrylamide, N,N-dimethyl-aminoethyl acrylate, N,N-diethyl-aminoethyl acrylate, N,N-dimethyl-aminoethyl methacrylate, N,N-diethyl-aminoethyl methacrylate, N,N-dimethyl-aminoethyl acrylamide, N,N-diethyl-aminoethyl acrylamide, N,N-dimethyl-aminoethyl methacrylamide, N,N-diethyl-aminoethyl methacrylamide, 2-vinylpyridine, 4-vinylpyridine, 4-methyl-5-vinylpyridine, 2-methyl-5-vinylpyridine, N-methyl-4-vinylpiperidine,

2-methyl-1-vinylimidazole, N,N-dimethylallylamine, dimethylaminoethyl vinyl ether and N-vinylpyrrolidone.

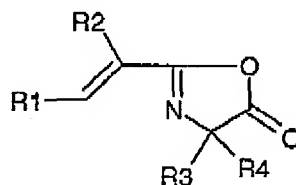
35. (new) The coating copolymer of claim 30 wherein the monomeric unit derived from functionally reactive monomers comprises oxazolinone moieties having the following formula:



wherein R³ and R⁴ independently can be an alkyl group having 1 to 14 carbon atoms, a cycloalkyl group having 3 to 14 carbon atoms, an aryl group having 5 to 12 ring atoms, an arenyl group having 6 to 26 carbon atoms, and 0 to 3 heteroatoms selected from S, N, and nonperoxidic O; or R³ and R⁴ taken together with the carbon to which they are joined can form a carbocyclic ring containing 4 to 12 ring atoms, and n is an integer 0 or 1.

36. (new) The coating copolymer of claim 35 wherein the monomeric unit derived from functionally reactive monomers comprises oxazolinone moieties selected from the group consisting of 2-ethenyl-1,3-oxazolin-5-one, 2-ethenyl-4-methyl-1,3-oxazolin-5-one, 2-isopropenyl-1,3-oxazolin-5-one, 2-isopropenyl-4-methyl-1,3-oxazolin-5-one, 2-ethenyl-4,4-dimethyl-1,3-oxazolin-5-one, 2-isopropenyl-4,4-dimethyl-1,3-oxazolin-5-one, 2-ethenyl-4-methyl-ethyl-1,3-oxazolin-5-one, 2-isopropenyl-4-methyl-4-butyl-1,3-oxazolin-5-one, 2-ethenyl-4,4-dibutyl-1,3-oxazolin-5-one, 2-isopropenyl-4-methyl-4-dodecyl-1,3-oxazolin-5-one, 2-isopropenyl-4,4-diphenyl-1,3-oxazolin-5-one, 2-isopropenyl-4,4-pentamethylene-1,3-oxazolin-5-one, 2-isopropenyl-4,4-tetramethylene-1,3-oxazolin-5-one, 2-ethenyl-4,4-diethyl-1,3-oxazolin-5-one, 2-ethenyl-4-methyl-4-nonyl-1,3-oxazolin-5-one, 2-isopropenyl-methyl-4-phenyl-1,3-oxazolin-5-one, 2-isopropenyl-4-methyl-4-benzyl-1,3-oxazolin-5-one, and 2-ethenyl-4,4-pentamethylene-1,3-oxazolin-5-one.

37. (new) The coating copolymer of claim 30 wherein the azlactone-functional monomers comprise monomers represented by the general formula:



where R^1 and R^2 independently denote a hydrogen atom or a lower alkyl radical with one to six carbon atoms, and R^3 and R^4 independently denote alkyl radicals with one to six carbon atoms or a cycloalkyl radical with 5 or 6 carbon atoms.

38. (new) The coating copolymer of claim 30 wherein the hydrophilic monomers further comprise monomers selected from the group consisting of compounds of general formula (I):



where R_2 is hydrogen or methyl and R_3 is hydrogen or is an aliphatic hydrocarbon group of up to 10 carbon atoms substituted by one or more water solubilizing groups such as carboxy, hydroxy, amino, lower alkylamino, lower dialkylamino, a polyethylene oxide group with from 2 to about 100 repeating units, or substituted by one or more sulfate, phosphate sulfonate, phosphonate, carboxamido, sulfonamido or phosphonamido groups, or mixtures thereof;

compounds of general formula (II):



where R_2 and R_3 are as defined above;

compounds of general formula (III):



where R_4 is lower alkyl of 1 to 3 carbon atoms and R_2 is as defined above;

compounds of general formula (IV):



wherein R_3 is as defined above;

compounds of general formula (V):



where R_3 is as defined above;

compounds of general formula (VI):



where R_2 is as defined above and R_3 is as defined above with the proviso that R_3 is other than hydrogen; and

vinyl substituted heterocycles, such as vinyl pyridines, vinyl piperidines and vinyl imidazoles and N-vinyl lactams, such as N-vinyl-2-pyrrolidinone.

39. (new) The coating copolymer of claim 38 wherein in Structural Formula (I), R_3 is an oligomer or polymer selected from the group consisting of polyethylene glycol, polypropylene glycol, poly(ethylene-propylene) glycol, poly(hydroxyethyl methacrylate), poly(dimethyl acrylamide), poly(acrylic acid), poly(methacrylic acid), polysulfone, poly(vinyl alcohol), polyacrylamide, poly(acrylamide-acrylic acid) poly(styrene sulfonate) sodium salt, poly(ethylene

oxide), poly(ethylene oxide-propylene oxide), poly(glycolic acid), poly(lactic acid), poly(vinylpyrrolidone), cellulose, polysaccharides, mixtures thereof, and copolymers thereof;

40. (new) The coating copolymer of claim 30 further comprising at least one hydrophobic monomer selected from the group consisting of compounds of the general formula (VII):



where R_2 is hydrogen or methyl and R_5 is a straight chain or branched aliphatic, cycloaliphatic or aromatic group having up to 20 carbon atoms which is unsubstituted or substituted by one or more alkoxy, alkanoyloxy or alkyl of up to 12 carbon atoms, halo, C_2 to C_5 polyalkyleneoxy of 2 to about 100 units, or an oligomer such as polyethylene, poly(methyl methacrylate), poly(ethyl methacrylate), or poly(glycidyl methacrylate), mixtures thereof, and copolymers thereof; compounds of the general formula (VIII):



where R_2 and R_5 are defined above;

compounds of the general formula (IX):



where R_5 is as defined above;

compounds of the general formula (X):



where R_5 is as defined above;

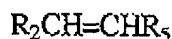
compounds of the general formula (XI):



(XI)

where R_5 is as defined above; and

compounds of the general formula (XII):



(XII)

where R_2 and R_5 is as defined above.

41. (new) The coating copolymer of claim 30 wherein the azlactone-functional monomer is selected from the group consisting of 2-isopropenyl-4,4-dimethyl-2-oxazolin-5-one, 2-vinyl-4,4-dimethyl-2-oxazolin-5-one, spiro-4'-(2'-isopropenyl-2'-oxazolin-5-one) cyclohexane, cyclohexane-spiro-4'-(2'-vinyl-2'-oxazol-5'-one) and 2-(-1-propenyl)-4,4-dimethyl-oxazol-5-one.

42. (new) The coating copolymer of claim 30 further comprising hydrophobic monomers selected from the group consisting of alkyl methacrylates, fluorinated alkyl methacrylates and long-chain acrylamides.

43. (new) The coating copolymer of claim 40 wherein the hydrophobic monomers are selected from the group consisting of methylacrylate, ethylacrylate, propylacrylate, isopropylacrylate, butylacrylate, ethoxyethylacrylate, methoxyethylacrylate, ethoxypropylacrylate, phenylacrylate, benzylacrylate, cyclohexylacrylate, hexafluoroisopropylacrylate, n-octyl-acrylate, methylmethacrylate, ethylmethacrylate, propylmethacrylate, isopropylmethacrylate, butylmethacrylate, ethoxyethylmethacrylate, methoxyethylmethacrylate, ethoxypropylmethacrylate, phenylmethacrylate, benzylmethacrylate, cyclohexylmethacrylate, hexafluoroisopropylmethacrylate, n-octyl-methacrylate, methylacrylamide, ethylacrylamide, propylacrylamide, isopropylacrylamide, butylacrylamide, ethoxyethylacrylamide, methoxyethylacrylamide, ethoxypropylacrylamide, phenylacrylamide, benzylacrylamide,

cyclohexylacrylamide, hexafluoroisopropylacrylamide, n-octyl-acrylamide, methylmethacrylamide, ethylmethacrylamide, propylmethacrylamide, isopropylmethacrylamide, butylmethacrylamide, ethoxyethylmethacrylamide, methoxyethylmethacrylamide, ethoxypropylmethacrylamide, phenylmethacrylamide, benzylmethacrylamide, cyclohexylmethacrylamide, hexafluoroisopropylmethacrylamide, n-octyl-methacrylamide, dimethyl fumarate, dimethyl maleate, diethyl fumarate, methyl vinyl ether, ethoxyethyl vinyl ether, vinyl acetate, vinyl propionate, vinyl benzoate, acrylonitrile, styrene, alpha-methylstyrene, 1-hexene, vinyl chloride, vinyl methylketone, vinyl stearate, 2-hexene methacrylate and 2-ethylhexyl methacrylate.